REVIEW OF ANALYTICAL RESULTS
BAYONNE BARREL AND DRUM
NEWARK, NEW JERSEY

Sediment Samples collected on 29 April 1997
(Volatiles, Semivolatiles, Pesticides/PCBs, Metals)

1.0 Introduction

The Bayonne Barrel and Drum Site (BB&D) is a former drum reconditioning facility occupying approximately 15 acres off Raymond Boulevard in the Ironbound section of Newark, New Jersey. The facility operated as an unlicensed treatment, storage, and disposal (TSD) facility from the early 1940's until the early 1980's when the company filed for bankruptcy. The site is bordered to the North and West by Routes 1 and 9, to the East by the New Jersey Turnpike and the South by a movie theater.

At the time the facility was operating, drum cleaning operations involved both closed-head and open-head drums. In closed-head drum cleaning, chains and caustic solution were used to remove material from drums. The spent solution drained through an oil-water separator into a 5,000-gallon underground holding/settling tank and was then pumped into a 60,000-gallon aboveground holding/settling tank. The liquid was decanted to the sewer under a permit from the Passaic Valley Sewage Commission. Open-head drums were placed on a conveyer and moved through a furnace/incinerator, which burned materials inside the drums. Residue materials were collected in two subsurface holding/settling tanks adjacent to the incinerator.

The operation produced a large amount of spent cleaning solutions, furnace ash and sludges. Approximately 40,000 pounds of incinerator ash and sludge were reportedly generated monthly. The storage of these wastes, as well as the storage of drums awaiting reconditioning, are believed to have been the main source of site contamination.

2.0 Sampling Event

On 29 April 1997, the Region II Superfund Technical Assessment and Response Team (START) collected five sediment samples from three storm sewers along the southern fence line of the site, adjacent to the New Jersey Turnpike, including one duplicate sample and extra volume for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis. The samples were homogenized in a stainless steel bowl. The volatile organic fraction was placed into sample containers prior to homogenization. Sample descriptions are included in Table B (Attachment B).

The samples were hand-delivered by START to the IEA, Inc. Laboratory for Target Compound List (TCL) Volatiles, Semivolatiles, Pesticides/Polychlorinated Biphenyls (PCBs), and Target Analyte List (TAL) metals analyses. On 1 May 1997 four samples were shipped to Triangle Laboratories for dioxin analysis. Dioxin analytical results were submitted to the EPA On-Scene

Coordinator (OSC) on 2 July 1997 (START Document Control Number 02-F-01166).

3.0 Discussion of Analytical Results

Under this review, the analytical results for TCL Volatiles, Semivolatiles, Pesticides/PCBs, and TAL metals were compared to the 7/11/96 New Jersey Department of Environmental Protection (NJDEP) Non-Residential Direct Contact Cleanup Criteria.

TCL Volatiles

None of the analytical compounds exceeded the NJDEP Non-Residential Direct Contact Cleanup Criteria.

TCL Semivolatiles

The NJDEP Cleanup Criterion for Benzo(a)pyrene was exceeded in samples SS-2 and SS-4. In addition, the result for Benzo(a)anthracene in SS-4 also exceeded the respective State Criterion. All these analytical results were qualified as an estimated concentration by the START organic data validator. Analytical results for Pentachlorophenol were qualified as rejected for all four samples due to laboratory calibration problems.

TCL Pesticides/PCBs

Under TCL analytical protocol, seven Aroclor compounds were analyzed. The sum of these individual results exceeded the NJDEP Cleanup Criterion for PCBs (2,000 µg/kg) in all four samples (3,400 - 6,700 µg/kg). In addition, analytical results for Aroclor-1242 were rejected in samples SS-2, SS-3, and SS-4 due to high % differences between the primary and confirmation columns. As a consequence, total PCBs in these samples may actually be higher than reported.

TAL Metals

The NJDEP Cleanup Criterion for lead (600 mg/kg) was exceeded in three samples (835 - 2,240 mg/kg) while the concentration in the fourth sample, SS-3, was detected at 581 mg/kg. The result for copper in sample SS-2 (2,740 mg/kg) was also higher than the NJDEP Cleanup Criterion (600 mg/kg). All these results were qualified as estimated by the data validator. Results for mercury were rejected for all four samples due to poor spike recovery.

Please refer to Table A (Attachment A) for the complete analytical results.

ATTACHMENT A

TABLE A ANALYTICAL RESULTS

TABLE A
BAYONNE BARREL AND DRUM, NEWARK, NJ
ANALYTICAL RESULTS FOR 29 APRIL 1997 SEDIMENT SAMPLING EVENT

VOLATILES	Non-residential Direct Contact Soil Cleanup Criteria [ug/kg]	SS-1 [ug/kg]	SS-2 [ug/kg]	SS-3 [ug/kg]	SS-4 [ug/kg]
Chloromethane	1,000,000 (d)	U	U	U	U
Bromomethane	1,000,000 (d)	U	U	U	U
Vinyl Chloride	7,000	U	U	U	U
Chloroethane	-	U	U	U	U
Methylene Chloride	210,000	U	U	U	U
Acetone	1,000,000 (d)	8 J	17 J	9 J	20 J
Carbon Disulfide	-	U	U	U	U
1,1-Dichloroethene	150,000	U	U	U	U
1,1-Dichloroethane	1,000,000 (d)	U	U	U	U
1,2-Dichloroethene (total[1])	1,000,000 (d)	U	U	U	U
Chloroform	28,000 (k)	U	U	U	U
1,2-Dichloroethane	24,000	U	U	U	U
2-Butanone (MEK)	1,000,000 (d)	5 J	UJ	UJ	8 J
1,1,1-Trichloroethane	1,000,000 (d)	U	U	U	U
Carbon Tetrachloride	4,000 (k)	U	U	U	U
Bromodichloromethane	46,000 (g)	U	U	U	U
1,2-Dichloropropane	43,000	U	U	U	U
1,3,-Dichloropropene (cis, trans)[2]	5,000 (k)	U	U	U	U
Trichloroethene (TCE) (Tetrachloroethylene)	54,000 (k)	U	U	U	U
Dibromochloromethane	1,000,000 (d)	U	U	U	U

[1] Laboratory analytical results reported for total 1,2-Dichloroethene; NJDEP Cleanup Criteria for trans- and cis-1,2-Dichloroethene.

[2] Laboratory analytical results for cis- and trans-1,3-Dichloropropene; NJDEP Cleanup Criterion for total 1,3-Dichloropropene.

Data Qualifiers:
B - compound detected in the associated Method Blank
R - rejected compound
J - estimated value
U - non-detected compound

For footnotes to NJDEP Soil Cleanup Criteria column, refer to last page this of table.

Table A (continued) **Bayonne Barrel & Drum**
Analytical Results for 29 April 1997 Sediment Sampling

VOLATILES	Non-residential Direct Contact Soil Cleanup Criteria [ug/kg]	SS-1 [ug/kg]	SS-2 [ug/kg]	SS-3 [ug/kg]	SS-4 [ug/kg]
1,1,2-Trichloroethane	420,000	U	U	U	U
Benzene	13,000	U	U	U	U
Bromoform	370,000	U	U	U	U
4-Methyl-2-Pentanone (MIBK)	1,000,000 (d)	U	U	U	U
2-Hexanone (MBK)	-	UJ	UJ	UJ	UJ
Tetrachloroethene	6,000 (k)	U	U	U	U
1,1,2,-Tetrachloroethane	70,000 (k)	U	U	U	U
Toluene	1,000,000 (d)	U	U	U	U
Chlorobenzene	680,000	13 J	U	U	U
Ethylbenzene	1,000,000 (d)	U	U	U	U
Styrene	97	U	U	U	U
Xylenes, total	1,000,000 (d)	U	U	U	U

Data Qualifiers:
B - compound detected in the associated Method Blank
R - rejected compound
J - estimated value
U - non-detected compound

For footnotes to NJDEP Soil Cleanup Criteria column, refer to last page this of table.

Table A (continued) **Bayonne Barrel & Drum**
Analytical Results for 29 April 1997 Sediment Sampling

SEMIVOLATILES	Non-residential Direct Contact Soil Cleanup Criteria [ug/kg]	SS-1 [ug/kg]	SS-2 [ug/kg]	SS-3 [ug/kg]	SS-4 [ug/kg]
Phenol	10,000,000 (c)	UJ	UJ	UJ	UJ
bis(chloroethyl)ether	3,000	UJ	UJ	UJ	UJ
2-Chlorophenol	5,200,000	UJ	UJ	UJ	UJ
1,3-Dichlorobenzene	10,000,000 (c)	UJ	UJ	UJ	UJ
1,4-Dichlorobenzene	10,000,000 (c)	UJ	UJ	UJ	UJ
1,2-Dichlorobenzene	10,000,000 (c)	UJ	74 J	UJ	93 J
2-Methylphenol	10,000,000 (c)	UJ	UJ	UJ	UJ
2,2'-oxybis(1-Chloropropane)	10,000,000 (c)	UJ	UJ	UJ	UJ
4-Methylphenol	-	UJ	UJ	UJ	UJ
N-Nitroso-di-n-propylamine	660 (f)	UJ	UJ	UJ	UJ
Hexachloroethane	100,000	UJ	UJ	UJ	UJ
Nitrobenzene	520,000	UJ	UJ	UJ	UJ
Isophorone	10,000,000 (c)	UJ	1,000 J	380 J	460 J
2-Nitrophenol	-	UJ	UJ	UJ	UJ
2,4-Dimethylphenol	10,000,000 (c)	UJ	UJ	UJ	UJ
bis(2-chloroethoxy)methane	-	UJ	UJ	UJ	UJ
2,4-Dichlorophenol	3,100,000	UJ	UJ	UJ	UJ
1,2,4-Trichlorobenzene	1,200,000	UJ	UJ	UJ	UJ
Naphthalene	4,200,000	UJ	200 J	62 J	320 J
4-Chloroaniline	4,200,000	UJ	UJ	UJ	UJ
Hexachlorobutadiene	21,000 (g)	UJ	UJ	UJ	UJ
4-Chloro-3-methylphenol	10,000,000 (c)	UJ	UJ	UJ	UJ
2-Methylnaphthalene	-	UJ	160 J	58 J	350 J
Hexachlorocyclopentadiene	7,300,000	UJ	UJ	UJ	UJ

Data Qualifiers:
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R - rejected compound
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U - non-detected compound

For footnotes to NJDEP Soil Cleanup Criteria column, refer to last page this of table.

Table A (continued) **Bayonne Barrel & Drum**
Analytical Results for 29 April 1997 Sediment Sampling

SEMIVOLATILES	Non-residential Direct Contact Soil Cleanup Criteria [ug/kg]	SS-1 [ug/kg]	SS-2 [ug/kg]	SS-3 [ug/kg]	SS-4 [ug/kg]
2,4,6-Trichlorophenol	270,000	UJ	UJ	UJ	UJ
2,4,5-Trichlorophenol	10,000,000 (c)	UJ	UJ	UJ	UJ
2-Chloronaphthalene	-	UJ	UJ	UJ	UJ
2-Nitroaniline	-	UJ	UJ	UJ	UJ
Dimethylphthalate	10,000,000 (c)	UJ	UJ	UJ	UJ
Acenaphthylene	-	UJ	290 UJ	130 UJ	320 UJ
2,6-Dintrotoluene	4,000 (l)	UJ	UJ	UJ	UJ
3-Nitroaniline	-	UJ	UJ	UJ	UJ
Acenaphthene	10,000,000 (c)	UJ	170 J	UJ	480 J
2,4-Dinitrophenol	2,100,000	UJ	UJ	UJ	UJ
4-Nitrophenol	-	UJ	UJ	UJ	UJ
Dibenzofuran	-	UJ	UJ	UJ	80 J
2,4-Dinitrotoluene	4,000 (l)	UJ	UJ	UJ	62 J
Diethylphthalate	10,000,000 (c)	UJ	UJ	UJ	UJ
4-Chlorophenyl-phenylether	-	UJ	UJ	UJ	UJ
Fluorene	10,000,00 (c)	UJ	200 J	UJ	560 J
4-Nitroaniline	-	UJ	UJ	UJ	UJ
4,6-Dinitro-2-methylphenol	-	UJ	UJ	UJ	UJ
N-Nitrosodiphenylamine	600,000	UJ	UJ	UJ	UJ
4-Bromophenyl-phenylether	-	UJ	UJ	UJ	UJ
Hexachlorobenzene	2,000	UJ	UJ	UJ	UJ
Pentachlorophenol	24,000	R	R	R	R
Phenanthrene	-	UJ	1,000 J	250 J	5,800 J
Anthracene	10,000,000 (c)	UJ	380 J	140 J	1,100 J
Carbazole	-	UJ	UJ	UJ	UJ

Data Qualifiers:
B - compound detected in the associated Method Blank
R - rejected compound
J - estimated value
U - non-detected compound

For footnotes to NJDEP Soil Cleanup Criteria column, refer to last page this of table.

Table A (continued) **Bayonne Barrel & Drum**
Analytical Results for 29 April 1997 Sediment Sampling

SEMIVOLATILES	Non-residential Direct Contact Soil Cleanup Criteria [ug/kg]	SS-1 [ug/kg]	SS-2 [ug/kg]	SS-3 [ug/kg]	SS-4 [ug/kg]
Di-n-butylphthalate	10,000,000 (c)	1,800 J	500 J	250 J	2,400 J
Fluoranthene	10,000,000 (c)	2,500 J	1,200 J	260 J	6,100 J
Pyrene	10,000,000 (c)	2,800 J	1,700 J	470 J	11,000 J
Butylbenzylphthalate	10,000,000 (c)	U J	370 J	400 J	460 J
3,3'-Dichlorobenzidine	6,000	U J	U J	U J	U J
Benzo(a)anthracene	4,000	U J	1,200 J	280 J	4,800 J
Chrysene	40,000	1,700 J	1,400 J	390 J	630 U J
bis(2-Ethylhexyl)phthalate	210,000	190,000 J	22,000 J	2,400 J	22,000 J
Di-n-octylphthalate	10,000,000 (c)	6,000 J	U J	U J	200 J
Benzo(b)fluoranthene	4,000	1,700 J	1,600 J	480 J	2,800 J
Benzo(k)fluoranthene	4,000	U J	1,800 J	110 J	3,700 J
Benzo(a)pyrene	660(f)	U J	1,400 J	390 J	3,900 J
Indeno(1,2,3-cd)pyrene	4,000	U J	580 J	280 J	920 J
Dibenz(a,h)anthracene	660 (f)	U J	190 J	96 J	320 J
Benzo(g,h,i)perylene	-	U J	680 J	400 J	810 J

Data Qualifiers:
B - compound detected in the associated Method Blank
R - rejected compound
J - estimated value
U - non-detected compound

For footnotes to NJDEP Soil Cleanup Criteria column, refer to last page this of table.

Table A (continued) **Bayonne Barrel & Drum**
Analytical Results for 29 April 1997 Sediment Sampling

PESTICIDES/PCBS	Non-residential Direct Contact Soil Cleanup Criteria [ug/kg]	SS-1 [ug/kg]	SS-2 [ug/kg]	SS-3 [ug/kg]	SS-4 [ug/kg]
Lindane (gamma-BHC)	2,200	U	U	U	U
Heptachlor	650	U	U	U	U
Aldrin	170	U	U	U	U
Heptachlor epoxide	-	U	U	U	U
Endosulfan I[3]	-	U	U	U	U
Dieldrin	180	U	U	U	U
4,4-DDE	9,000	U	U	U	U
Endrin	310,000	U	U	U	U
Endosulfan II	-	U	U	U	U
4,4-DDD	12,000	U	U	U	U
Endosulfan Sulfate	-	U	U	U	U
4,4'-DDT	9,000	U	U	U	U
Methoxychlor	5,200,000	U	U	U	U
Endrin Ketone	-	U	U	U	U
Endrin Aldehyde	-	U	U	U	U
alpha-Chlordane	-	U	U	U	U
gamma-Chlordane	-	U	U	U	U
Toxaphene	200 (k)	U	U	U	U
PCBs[4]	2,000	6,700	4,200	3,400 J	6,200 J

[3] Laboratory analytical results for Endosulfan I and II; NJDEP Cleanup Criterion for Endosulfan.

[4] Laboratory analytical results for seven Aroclor compounds; NJDEP Cleanup Criterion for total PCBs.

Data Qualifiers:
B - compound detected in the associated Method Blank
R - rejected compound
J - estimated value
U - non-detected compound

For footnotes to NJDEP Soil Cleanup Criteria column, refer to last page this of table.

Table A (continued) **Bayonne Barrel & Drum**
Analytical Results for 29 April 1997 Sediment Sampling

TOTAL METALS	Non-residential Direct Contact Soil Cleanup Criteria [mg/kg]	SS-1 [mg/kg]	SS-2 [mg/kg]	SS-3 [mg/kg]	SS-4 [mg/kg]
Aluminum	-	4,920	6,770	23,200	6,540
Antimony	340	52 J	15.5 B	15.4 B	12.6 B
Arsenic	20(e)	11.2 J	13.8 B	7.9 J	10.6 J
Barium	47,000 (n)	939	1,120	1,310	618
Beryllium	1(f)	0.25 B	0.43 B	0.31 B	0.43 B
Cadmium	100	47.8 J	34.0 B	7.2 J	6.8 J
Calcium	-	10,200	8,570 J	3,450	3,960 J
Chromium	-	367 J	128 J	102 J	117
Cobalt	-	44.3	9.2 B	7.9 B	8.5 B
Copper	600 (m)	348 J	2,740 J	102 J	290 J
Iron	-	33,900 J	48,800	17,700	38,600
Lead	600 (q)	2,240 J	933 J	581 J	835 J
Magnesium	-	3,370 J	1,970	2,820	1,980
Manganese	-	180 J	180 J	173 J	172 J
Mercury	270	R	R	R	R
Nickel	2,400 (k) (n)	57.4	28.4	19.0	25.4
Potassium	-	341 B	704 B	349 B	564 B
Selenium	3,100 (n)	3.1	6.0	1.5	3.5
Silver	4,100 (n)	3.5 J	1.9 B J	0.50 B J	5.2 J
Sodium	-	784 B	587 B	447 B	342 B
Thallium	2 (f)	1.6 B	1.1 B J	1.8 B J	1.2 BJ
Vanadium	7,100 (n)	42.2	24.8	21.6	24.1
Zinc	1,500 (m)	1,220	1,050	365	675
Cyanide	21,000 (o)	NR	NR	NR	NR

Data Qualifiers:
B - compound detected in the associated Method Blank
R - rejected compound
J - estimated value
U - non-detected compound

For footnotes to NJDEP Soil Cleanup Criteria column, refer to last page this of table.

Footnotes for Non-residential Direct Contact Soil Cleanup Criteria Column
(NJDEP Soil Cleanup Criteria, last revised - 7/11/96)

(a) criteria are health based using an incidental ingestion exposure pathway except where noted below
(b) criteria are subject to change based on site specific factors (e.g., aquifer classification, soil type, natural background, environmental impacts, etc.)
(c) based criteria exceeds the 10,000 mg/kg maximum for total organic contaminants
(d) health based criterion based exceeds the 1,000 mg/kg for total volatile organic contaminants
(e) clean-up standard proposal was based on natural background
(f) health based criterion is lower than analytical limits; cleanup criterion based on practical quantitation level
(g) criterion has been recalculated based on new toxicological data
(h) the impact to ground water values for inorganics will be developed based upon site specific chemical and physical parameters
(i) original criterion was incorrectly calculated and has been recalculated
(j) typographical error
(k) criterion based on inhalation exposure pathway which yielded a more stringent criterion than the incidental ingestion exposure pathway
(l) new criterion derived using methodology in the basis and background document
(m) criterion based on ecological (phytotoxicity) effects
(n) level of the human health based criterion is such that evaluation for potential environmental impacts on a site by site basis is recommended
(o) level of the criterion is such that evaluation for the potential acute exposure hazard is recommended
(p) criterion based on the USEPA Intergrated Exposure Uptake Biokinetic (IEUBK) model using the default parameters. The concentration is considered to protect 95% of target population (children) at a blood lead level of 10 µg/dl
(q) criteria was derived from a model developed by the Society for Environmental Geochemistry and Health (SEGH) and was designed to be protective in the workplace
(r) insufficient information available to calculate impact to ground water criteria

Note: Material bracketed [thus] is deleted and material underlined thus is added

ATTACHMENT B

TABLE B SAMPLE DESCRIPTIONS

TABLE 8
STORM SEWER SAMPLE DESCRIPTIONS
BAYONNE BARREL AND DRUM
NEWARK, ESSEX COUNTY, NEW JERSEY

SAMPLE NO.	MATRIX	SAMP. TYPE	DATE/TIME	ANALYSIS	LOCATION
SS1 VOL	Sediment	Grab	04/29/97/1130	Volatiles	Storm Sewer Number 2
SS1 SEMIVOL	Sediment	Grab	04/29/97/1130	Semivolatiles	Storm Sewer Number 2
SS1 PCBPEST	Sediment	Grab	04/29/97/1130	PCBs, Pesticides	Storm Sewer Number 2
SS1 TALMET	Sediment	Grab	04/29/97/1130	TAL Metals	Storm Sewer Number 2
SS2 VOL	Sediment	Grab	04/29/97/1150	Volatiles	Storm Sewer Number 4
SS2 SEMIVOL	Sediment	Grab	04/29/97/1150	Semivolatiles	Storm Sewer Number 4
SS2 PCBPEST	Sediment	Grab	04/29/97/1150	PCBs, Pesticides	Storm Sewer Number 4
SS2 TALMET	Sediment	Grab	04/29/97/1150	TAL Metals	Storm Sewer Number 4
SS2 MS/MSDV	Sediment	Grab	04/29/97/1155	Volatiles	Storm Sewer Number 4
SS2 MS/MSDSV	Sediment	Grab	04/29/97/1155	Semivolatiles	Storm Sewer Number 4
SS2 MS/MSDPP	Sediment	Grab	04/29/97/1155	PCBs, Pesticides	Storm Sewer Number 4
SS2 MS/MSDTM	Sediment	Grab	04/29/97/1155	TAL Metals	Storm Sewer Number 4
SS3 VOL	Sediment	Grab	04/29/97/1220	Volatiles	Storm Sewer Number 5
SS3 SEMIVOL	Sediment	Grab	04/29/97/1220	Semivolatiles	Storm Sewer Number 5
SS3 PCBPEST	Sediment	Grab	04/29/97/1220	PCBs, Pesticides	Storm Sewer Number 5
SS3 TALMET	Sediment	Grab	04/29/97/1220	TAL Metals	Storm Sewer Number 5
SS4 VOL[D]	Sediment	Grab	04/29/97/1210	Volatiles	Storm Sewer Number 4
SS4 SEMIVOL[D]	Sediment	Grab	04/29/97/1210	Semivolatiles	Storm Sewer Number 4
SS4 PCBPEST[D]	Sediment	Grab	04/29/97/1210	PCBs, Pesticides	Storm Sewer Number 4
SS4 TALMET[D]	Sediment	Grab	04/29/97/1210	TAL Metals	Storm Sewer Number 4
SS-1*	Sediment	Grab	04/29/97/1130	PCDD/PCDF	Storm Sewer Number 2
SS-2*	Sediment	Grab	04/29/97/1150	PCDD/PCDF	Storm Sewer Number 4
SS-3*	Sediment	Grab	04/29/97/1210	PCDD/PCDF	Storm Sewer Number 5
SS-4*	Sediment	Grab	04/29/97/1220	PCDD/PCDF	Storm Sewer Number 4

[D]-indicates a duplicate sample
*-samples sent to a separate lab for dioxin analysis

WESTON®
MANAGERS DESIGNERS/CONSULTANTS

Roy F. Weston, Inc.
Federal Programs Division
Suite 201
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Edison, New Jersey 08837-3703
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SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019

July 2, 1997

Mr. Joseph Cosentino
On-Scene Coordinator
U.S. Environmental Protection Agency
Removal Action Branch
2890 Woodbridge Avenue
Edison, NJ 08837

TDD NO: 02-97-03-0005
DOCUMENT CONTROL NO: START-02-F-01166
SUBJECT: Bayonne Barrel & Drum **Dioxin Data Summary**

Dear Mr. Cosentino,

Enclosed please find the laboratory raw data package and the Dioxin Data Summary Report for the storm sewer sampling conducted on 29 April 1997 at the Bayonne Barrel & Drum site in Newark, Essex County, New Jersey.

If you have any questions, please call me at the office at (908) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

for Patrick Austin
Project Manager

Enclosures

cc: TDD File

FORM B
PCDD/PCDF Toxicity Equivalence Summary
EPA Sample No: SS3 (Storm Sewer #5)

ANALYTE	CONCENTRATION *	TEF MULTIPLIER	TEF ADJUSTED CONCENTRATION *
2378-TCDD	0.0182	1	0.018
2378-TCDF	19.41 J	0.1	1.941
12378-PeCDF	1.69 J	0.05	0.0845
12378-PeCDD	0.0303	0.5	0.01515
23478-PeCDF	5.41	0.5	2.705
123478-HxCDF	16.85 J	0.1	1.685
123678-HxCDF	1.51	0.1	0.151
123478-HxCDD	0.0332	0.1	0.00332
123678-HxCDD	0.062	0.1	0.0062
123789-HxCDD	0.0606 J	0.1	0.00606
234678-HxCDF	1.93 J	0.1	0.193
123789-HxCDF	0.0222 J	0.1	0.00222
1234678-HpCDF	25.07	0.01	0.2507
1234678-HpCDD	0.552	0.01	0.00552
1234789-HpCDF	0.392	0.01	0.00392
OCDD	20.26	0.001	0.02026
OCDF	17.93	0.001	0.01793
		TOTAL	7.10898

* Concentration unit - ug/kg (ppb)

J - Estimated Value

FORM B
PCDD/PCDF Toxicity Equivalence Summary
EPA Sample No: SS2 (Storm Sewer #4)

ANALYTE	CONCENTRATION *	TEF** MULTIPLIER	TEF ADJUSTED CONCENTRATION *
2378-TCDD	0.0367	1	0.037
2378-TCDF	7.41 J	0.1	0.741
12378-PeCDF	0.701 J	0.05	0.03505
12378-PeCDD	0.0271	0.5	0.01355
23478-PeCDF	2.07	0.5	1.035
123478-HxCDF	6.42 J	0.1	0.642
123678-HxCDF	0.602	0.1	0.0602
123478-HxCDD	0.0269	0.1	0.00269
123678-HxCDD	0.071	0.1	0.0071
123789-HxCDD	0.0967 J	0.1	0.00967
234678-HxCDF	0.693 J	0.1	0.0693
123789-HxCDF	0.0156 J	0.1	0.00156
1234678-HpCDF	11.06	0.01	0.1106
1234678-HpCDD	1.11	0.01	0.0111
1234789-HpCDF	0.179	0.01	0.00179
OCDD	10.34	0.001	0.01034
OCDF	7.86	0.001	0.00786
		TOTAL	2.79551

* Concentration unit - ug/kg (ppb)

** TEF: Toxicity Equivalent Factor

J - Estimated Value

FORM B

PCDD/PCDF Toxicity Equivalence Summary

EPA Sample No: SS4 (Duplicate of SS2, Storm Sewer #4)

ANALYTE	CONCENTRATION *	TEF MULTIPLIER	TEF ADJUSTED CONCENTRATION *
2378-TCDD	0.0359	1	0.036
2378-TCDF	8.06 J	0.1	0.806
12378-PeCDF	0.697 J	0.05	0.03485
12378-PeCDD	0.0284	0.5	0.0142
23478-PeCDF	2.06	0.5	1.03
123478-HxCDF	6.48 J	0.1	0.648
123678-HxCDF	0.751	0.1	0.0751
123478-HxCDD	0.029	0.1	0.0029
123678-HxCDD	0.0927	0.1	0.00927
123789-HxCDD	0.0829 J	0.1	0.00829
234678-HxCDF	0.767 J	0.1	0.0767
123789-HxCDF	0.0155 J	0.1	0.00155
1234678-HpCDF	9.66	0.01	0.0966
1234678-HpCDD	1.65	0.01	0.0165
1234789-HpCDF	0.25	0.01	0.0025
OCDD	14.24	0.001	0.01424
OCDF	10.81	0.001	0.01081
		TOTAL	2.88341

* Concentration unit - ug/kg (ppb)

J - Estimated Value

FORM B
PCDD/PCDF Toxicity Equivalence Summary
EPA Sample No: SS-1 (Storm Sewer #2)

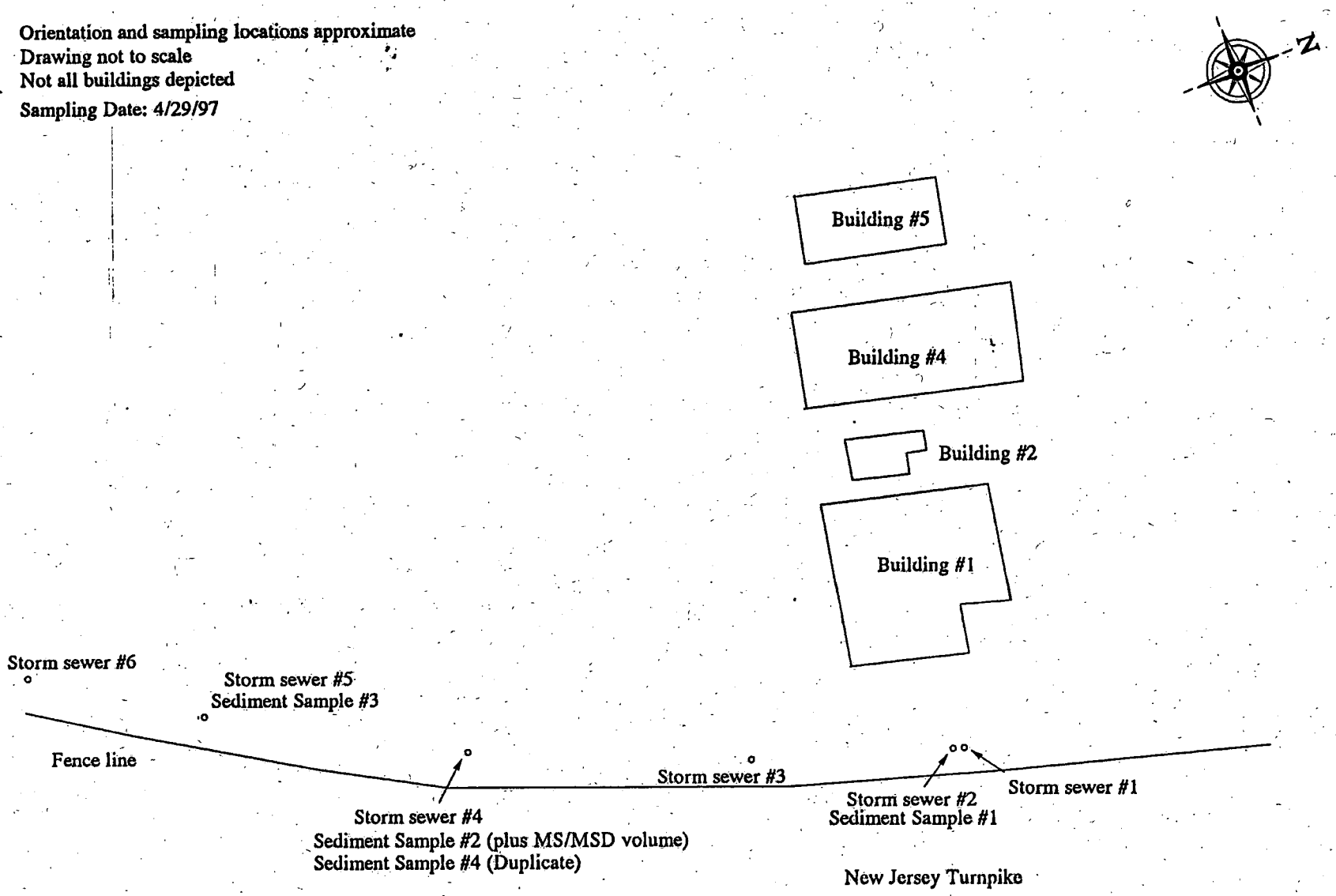
ANALYTE	CONCENTRATION *	TEF** MULTIPLIER	TEF ADJUSTED CONCENTRATION *
2378-TCDD	0.0461	1	0.046
2378-TCDF	7.05 J	0.1	0.705
12378-PeCDF	0.8 J	0.05	0.04
12378-PeCDD	0.033	0.5	0.0165
23478-PeCDF	2.26	0.5	1.13
123478-HxCDF	7.69 J	0.1	0.769
123678-HxCDF	0.819	0.1	0.0819
123478-HxCDD	0.0625	0.1	0.00625
123678-HxCDD	0.137	0.1	0.0137
123789-HxCDD	0.112 J	0.1	0.0112
234678-HxCDF	0.778 J	0.1	0.0778
123789-HxCDF	0.0151 J	0.1	0.00151
1234678-HpCDF	17.14	0.01	0.1714
1234678-HpCDD	3.15	0.01	0.0315
1234789-HpCDF	0.271	0.01	0.00271
OCDD	27.04	0.001	0.02704
OCDF	11.72	0.001	0.01172
		TOTAL	3.14333

* Concentration unit - ug/kg (ppb)

** TEF: Toxicity Equivalent Factor

J - Estimated Value

Orientation and sampling locations approximate
Drawing not to scale
Not all buildings depicted
Sampling Date: 4/29/97



WESTON MANAGERS DESIGNERS/CONSULTANTS Roy F. Weston, Inc. FEDERAL PROGRAMS DIVISION	EPA PM J. Cosentino	Bayonne Barrel & Drum Newark, New Jersey
IN ASSOCIATION WITH RESOURCE APPLICATION, Inc. C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.	START PM P. Austin	Figure 2: Sediment Sampling Locations